

IN THE CLAIMS:

Claim 1 (Currently Amended) A dielectric material comprising elements of Si, C, O, H having a dielectric constant of about 2.8 or less, a tensile stress of less than 45 MPa, an elastic modulus from about 2 to about 15 GPa, and a hardness from about 0.2 to about 2 GPa, said dielectric material has a covalently bonded tri-dimensional network structure.

Claim 2 (Original) The dielectric material of Claim 1 wherein said material has a cohesive strength from about 1.7 to about 4.5 J/m².

Claim 3 (Original) The dielectric material of Claim 1 wherein said material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness from about 1.1 to about 2.8 microns.

Claim 4 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.7, the tensile stress is less than 45 MPa, the elastic modulus is from about 9 to about 15 GPa, and the hardness is from about 0.5 to about 2 GPa.

Claim 5 (Original) The dielectric material of Claim 4 wherein said material has a cohesive strength from about 4.0 to about 4.5 J/m².

Claim 6 (Original) The dielectric material of Claim 4 wherein said material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 2.8 microns.

Claim 7 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.6, the tensile stress is less than 45 MPa, the elastic modulus is from about 8 to about 13 GPa, and the hardness is from about 0.4 to about 1.9 GPa.

Claim 8 (Original) The dielectric material of Claim 7 wherein the material has a cohesive strength from about 4.0 to about 4.5 J/m².

Claim 9 (Original) The dielectric material of Claim 7 wherein the material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 2.7 microns.

Claim 10 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.5, the tensile stress is less than 45 MPa, the elastic modulus is from about 7 to about 12 GPa, and the hardness is from about 0.35 to about 1.8 GPa.

Claim 11 (Original) The dielectric material of Claim 10 wherein the material has a cohesive strength from about 2.5 to about 3.9 J/m².

Claim 12 (Original) The dielectric material of Claim 10 wherein the material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 2.5 microns.

Claim 13 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.4, the tensile stress is less than 40 MPa, the elastic modulus is from about 6 to about 11 GPa, and the hardness is from about 0.3 to about 1.7 GPa.

Claim 14 (Original) The dielectric material of Claim 13 wherein the material has a cohesive strength from about 2.4 to about 3.8 J/m².

Claim 15 (Original) The dielectric material of Claim 13 wherein said material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 2.3 microns.

Claim 16 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.3, the tensile stress is less than 40 MPa, the elastic modulus is from about 5 to about 10 GPa, and the hardness is from about 0.25 to about 1.6 GPa.

Claim 17 (Original) The dielectric material of Claim 16 wherein material has a cohesive strength from about 2.2 to about 3.7 J/m².

Claim 18 (Original) The dielectric material of Claim 16 wherein said material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 1.9 microns.

Claim 19 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.2, the tensile stress is less than 40 MPa, the elastic modulus is from about 4 to about 9 GPa, and the hardness is from about 0.2 to about 1.5 GPa.

Claim 20 (Original) The dielectric material of Claim 19 wherein the material has a cohesive strength from about 2.0 to about 3.5 J/m².

Claim 21 (Original) The dielectric material of Claim 19 wherein the material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 1.5 microns.

Claim 22 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.1, the tensile stress is from about 20 to about 35 MPa, the elastic modulus is from about 3 to about 8 GPa, and the hardness is from about 0.2 to about 1.4 GPa.

Claim 23 (Original) The dielectric material of Claim 22 wherein the material has a cohesive strength from about 1.8 to about 3.4 J/m².

Claim 24 (Original) The dielectric material of Claim 22 wherein the material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 1.3 microns.

Claim 25 (Original) The dielectric material of Claim 1 wherein the dielectric constant is 2.0, the tensile stress is from about 20 to about 35 MPa, the elastic modulus is from about 2 to about 7 GPa, and the hardness is 0.2 GPa.

Claim 26 (Original) The dielectric material of Claim 25 wherein the material has a cohesive strength is from about 1.7 to about 3.3 J/m².

Claim 27 (Original) The dielectric material of Claim 25 wherein the material has a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness of 1.1 microns.

Claim 28 (Cancelled)

Claim 29 (Currently Amended) The dielectric material of Claim ~~[[28]]~~ 1 wherein said covalently bonded tri-dimensional network structure further comprises Si-O bonds that produce an FTIR absorbance spectrum in which the ratio of the cage Si-O intensity to the network Si-O intensity is decreased using a treatment after deposition.

Claim 30 (Original) The dielectric material of Claim 29 wherein said treatment uses at least an energy source selected from the group consisting of thermal, chemical, ultraviolet (UV) light, electron beam (e-beam), microwave and plasma.

Claim 31 (Original) The dielectric material of Claim 1 wherein said material has a water contact angle that is greater than 70°.

Claim 32 (Original) The dielectric material of Claim 1 wherein said dielectric material further comprises a multiplicity of nanometer-sized pores.

Claim 33 (Currently Amended) An interconnect structure comprising at least a dielectric material comprising elements of Si, C, O, H having a dielectric constant of about 2.8 or less, a tensile stress of less than 45 MPa, an elastic modulus from about 2 to about 15 GPa, and a hardness from about 0.2 to about 2 GPa and wiring regions, said dielectric material has a covalently bonded tri-dimensional network structure.

Claim 34 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.7, the elastic modulus of the dielectric material is from about 9 to about 15 GPa, and the hardness of the dielectric material is from about 0.5 to about 2 GPa.

Claim 35 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.6, the elastic modulus of the dielectric material is from about 8 to about 13 GPa, and the hardness of the dielectric material is from about 0.4 to about 1.9 GPa.

Claim 36 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.5, the elastic modulus of the dielectric material is from about 7 to about 12 GPa, and the hardness of the dielectric material is from about 0.35 to about 1.8 GPa.

Claim 37 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.4, the elastic modulus of the dielectric material is from about 6 to about 11 GPa, and the hardness of the dielectric material is from about 0.3 to about 1.7 GPa.

Claim 38 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.3, the elastic modulus of the dielectric material is from about 5 to about 10 GPa, and the hardness of the dielectric material is from about 0.25 to about 1.6 GPa.

Claim 39 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.2, the elastic modulus of the dielectric material is from about 4 to about 9 GPa, and the hardness of the dielectric material is from about 0.2 to about 1.5 GPa.

Claim 40 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.1, the elastic modulus of the dielectric material is from about 3 to about 8 GPa, and the hardness of the dielectric material is from about 0.2 to about 1.4 GPa.

Claim 41 (Original) The electronic structure of Claim 33 wherein the dielectric constant of the dielectric material is 2.0, the tensile stress of the dielectric material is from about 20 to

about 35 MPa, the elastic modulus of the dielectric material is from about 2 to about 7 GPa, and the hardness of the dielectric material is 0.2 GPa.

Claim 42 (Currently Amended) The electronic structure of Claim 33 wherein said dielectric material ~~covalently-bonded tri-dimensional network structure~~ further comprises Si-O bonds that produce an FTIR absorbance spectrum in which the ratio of the cage Si-O intensity to the network Si-O intensity is decreased using a treatment after deposition.

Claim 43 (Cancelled)

Claim 44 (Original) The electronic structure of Claim 42 wherein said treatment uses at least an energy source selected from the group consisting of thermal, chemical, ultraviolet (UV) light, electron beam (e-beam), microwave and plasma.

Claim 45 (Original) The electronic structure of Claim 33 wherein the dielectric material has a water contact angle of greater than 70°.

Claim 46 (Original) The electronic structure of Claim 33 wherein said dielectric material further comprises a multiplicity of nanometer-sized pores.

Claims 47- 57 (Cancelled)

Claim 58 (New) A dielectric material comprising elements of Si, C, O, H having a dielectric constant of about 2.8 or less, a tensile stress of less than 45 MPa, an elastic modulus

from about 2 to about 15 GPa, a hardness from about 0.2 to about 2 GPa, a cohesive strength from about 1.7 to about 4.5 J/m², and a crack development velocity in water of not more than 1×10^{-10} m/sec for a film thickness from about 1.1 to about 2.8 microns.